

FUNDAMENTALS OF DEEP LEARNING FOR COMPUTER VISION

Duration: 1 day

Delivery Type: Classroom (Hands-on labs)

OVERVIEW

This workshop teaches deep learning techniques for a range of computer vision tasks through a series of hands-on exercises. You will work with widely-used deep learning tools, frameworks, and workflows to train and deploy neural network models on a fully-configured, GPU-accelerated workstation in the cloud. After a quick introduction to deep learning, you will advance to: building and deploying deep learning applications for image classification and object detection, modifying your neural networks to improve their accuracy and performance, and implementing the workflow you have learned on a final project. At the end of the workshop, you will have access to additional resources to create new deep learning applications on your own.

Upon successful completion of the workshop, participants will receive NVIDIA DLI Certification to recognize subject matter competency and support professional career growth.

WHY DEEP LEARNING INSTITUTE HANDS-ON TRAINING?

- Learn how to build deep learning and accelerated computing applications across a wide range of industry segments such as autonomous vehicles, digital content creation, finance, game development, and healthcare
- Obtain guided hands-on experience using the most widely-used, industry-standard software, tools, and frameworks
- Gain real-world expertise through content designed in collaboration with industry leaders including the Children's Hospital Los Angeles, Mayo Clinic, and PwC
- Earn NVIDIA DLI Certification to demonstrate your subject matter competency and support professional career growth
- Access courses anywhere, anytime with a fully-configured, GPU-accelerated workstation in the cloud

PREREQUISITES

Familiarity with programming fundamentals such as functions and variables

COURSE OBJECTIVE

At the conclusion of the workshop, you will have an understanding of the fundamentals of deep learning and be able to:

- Implement common deep learning workflows, such as image classification and object detection.
- Experiment with data, training parameters, network structure, and other strategies to increase performance and capability of neural networks.
- Integrate and deploy neural networks in your own applications to start solving sophisticated real-world problems.

COURSE OUTLINE

	Components	Description
Introduction (45 mins)	<ul style="list-style-type: none"> • Course overview • Getting started with deep learning 	Introduction to deep learning, situations in which it is useful, key terminology, industry trends, and challenges
Break (15 mins)		
Unlocking New Capabilities (120 mins)	<ul style="list-style-type: none"> • Biological inspiration for deep neural networks (DNNs) • Training DNNs with big data 	Hands-on exercise: training neural networks to perform image classification by harnessing the three main ingredients of deep learning: deep neural networks, big data, and the GPU
Break (45 mins)		
Unlocking New Capabilities (40 mins)	<ul style="list-style-type: none"> • Deploying DNN models 	Hands-on exercise: deployment of trained neural networks from their training environment into real applications
Measuring and Improving Performance (100 mins)	<ul style="list-style-type: none"> • Optimizing DNN performance • Incorporating object detection 	Hands-on exercise: neural network performance optimization and applying DNNs to object detection
Summary (20 mins)	<ul style="list-style-type: none"> • Summary of key learnings 	Review of concepts and practical takeaways
Break (15 mins)		
Assessment (60 mins)	<ul style="list-style-type: none"> • Assessment project: train and deploy a deep neural network 	Validate learnings by applying the deep learning application development workflow (load dataset, train and deploy model) to a new problem
Next Steps (15 mins)	<ul style="list-style-type: none"> • Workshop survey • Setting up your own GPU-enabled environment • Additional project ideas 	Learn how to setup your GPU-enabled environment to begin work on your own projects. Explore additional project ideas along with resources to get started with NVIDIA AML on the cloud, nvidia-docker, and the NVIDIA DIGITS container.